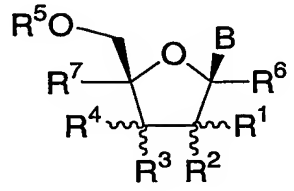
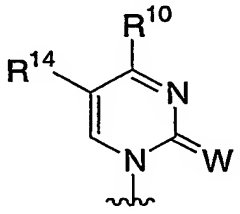
WHAT IS CLAIMED IS:

1. A compound of structural formula I:

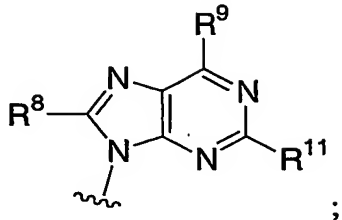


(I)

or a pharmaceutically acceptable salt thereof;
wherein B is



or



;

W is O or S;

R^1 is fluoromethyl, difluoromethyl, or trifluoromethyl;

R^2 is hydrogen, fluorine, amino, hydroxy, mercapto, C_{1-4} alkoxy, C_{1-8} alkylcarbonyloxy, or C_{1-4} alkyl;

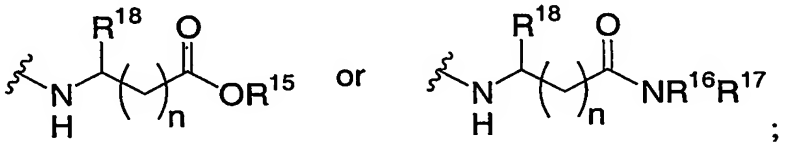
R^3 and R^4 are each independently selected from the group consisting of hydrogen, cyano, azido, halogen, hydroxy, mercapto, amino, C_{1-4} alkoxy, C_{1-8} alkylcarbonyloxy, C_{2-4} alkenyl, C_{2-4} alkynyl, and C_{1-4} alkyl, wherein alkyl is unsubstituted or substituted with hydroxy, amino, C_{1-4} alkoxy, C_{1-4} alkylthio, or one to three fluorine atoms;

R^5 is hydrogen, C_{1-10} alkylcarbonyl, $P_3O_9H_4$, $P_2O_6H_3$, or $P(O)R^{12}R^{13}$;

R^6 and R^7 are each independently hydrogen, methyl, hydroxymethyl, or fluoromethyl;

R^8 is hydrogen, C_{1-4} alkyl, C_{2-4} alkynyl, halogen, cyano, carboxy, C_{1-4} alkyloxycarbonyl, azido, amino, C_{1-4} alkylamino, di(C_{1-4} alkyl)amino, hydroxy, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, or (C_{1-4} alkyl)$_{0-2}$ aminomethyl;

R^9 and R^{10} are each independently hydrogen, hydroxy, mercapto, halogen, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{1-8} alkylcarbonyloxy, C_{3-6} cycloalkylcarbonyloxy, C_{1-8} alkyloxycarbonyloxy, C_{3-6} cycloalkyloxycarbonyloxy, $-OCH_2CH_2SC(=O)C_{1-4}$ alkyl, $-OCH_2O(C=O)C_{1-4}$ alkyl, $-OCH(C_{1-4}$ alkyl$)O(C=O)C_{1-4}$ alkyl, amino, C_{1-4} alkylamino, di(C_{1-4} alkyl)amino, C_{3-6} cycloalkylamino, di(C_{3-6} cycloalkyl)amino, or an amino acyl residue having structural formula



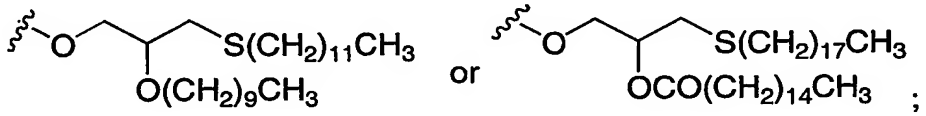
;

n is 0, 1, or 2;

R^{11} is hydrogen, hydroxy, halogen, C_{1-4} alkoxy, amino, C_{1-4} alkylamino, di(C_{1-4} alkyl)amino, C_{3-6} cycloalkylamino, or di(C_{3-6} cycloalkylamino);

R^{15}, R^{16}, and R^{17} are each independently hydrogen or C_{1-6} alkyl;

R^{12} and R^{13} are each independently hydroxy, $-OCH_2CH_2SC(=O)C_{1-4}$ alkyl, $-OCH_2O(C=O)OC_{1-4}$ alkyl, $-NHCHMeCO_2Me$, $-OCH(C_{1-4}$ alkyl$)O(C=O)C_{1-4}$ alkyl,

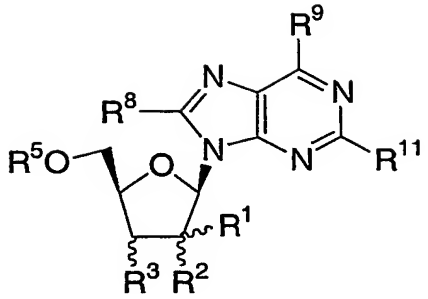


;

R^{14} is hydrogen, C_{1-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{1-4} alkylamino, CF_3, or halogen; and

R^{18} is hydrogen, C_{1-4} alkyl, or phenyl C_{0-2} alkyl.

2. The compound of Claim 1 of structural formula II:



(II)

or a pharmaceutically acceptable salt thereof;

wherein

R^1 is fluoromethyl or difluoromethyl;

R^2 is hydroxy, fluoro, or C_{1-3} alkoxy;

R^3 is hydrogen, halogen, hydroxy, amino, or C_{1-3} alkoxy;

R^5 is hydrogen, $P_3O_9H_4$, $P_2O_6H_3$, or PO_3H_2;

R^8 is hydrogen, amino, or C_{1-4} alkylamino; and

R^9 and R^{10} are each independently hydrogen, halogen, hydroxy, amino, C_{1-4} alkylamino, di(C_{1-4} alkyl)amino, or C_{3-6} cycloalkylamino.

3. The compound of Claim 2 wherein

R^1 is fluoromethyl or difluoromethyl;

R^2 is hydroxy, fluoro, or methoxy;

R^3 is hydrogen, fluoro, hydroxy, amino, or methoxy;

R^5 is hydrogen or $P_3O_9H_4$;

R^8 is hydrogen or amino; and

R^9 and R^{10} are each independently hydrogen, fluoro, hydroxy, or amino.

4. The compound of Claim 1 selected from the group consisting of:

6-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine;

6-amino-9-(2-*C*-fluoromethyl-β-D-arabinofuranosyl)purine;

2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-one;

2-amino-9-(2-*C*-fluoromethyl-β-D-arabinofuranosyl)-3,9-dihydropurin-6-one;

2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-thione;

2,6-diamino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine;

9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-6-methylaminopurine;
2'-*C*-(fluoromethyl)cytidine;
2'-*C*-(fluoromethyl)-5-methylcytidine;
2'-*C*-(fluoromethyl)uridine;
2'-*C*-(fluoromethyl)-5-methyluridine;
and the corresponding 5'-triphosphates;
or a pharmaceutically acceptable salt thereof.

5. The compound of Claim 4 which is 2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-one; or a pharmaceutically acceptable salt thereof.

6. The compound of Claim 4 which is 6-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine; or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition comprising a compound of Claim 1 and a pharmaceutically acceptable carrier.

8. A method of treating RNA-dependent RNA virus infection comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound according to Claim 1.

9. The method of Claim 8 wherein said RNA-dependent RNA virus infection is hepatitis C virus (HCV) infection.

10. The method of Claim 9 in combination with a therapeutically effective amount of another agent active against HCV.

11. The method of Claim 10 wherein said agent active against HCV is a 2'-*C*-Me-ribonucleoside; ribavirin; levovirin; thymosin alpha-1; interferon-β; an inhibitor of NS3 serine protease; an inhibitor of inosine monophosphate dehydrogenase; interferon-α or pegylated interferon-α, alone or in combination with ribavirin or levovirin.

12. The method of Claim 11 wherein said agent active against HCV is interferon-α or pegylated interferon-α, alone or in combination with ribavirin.

13. Use of a compound of Claim 1 for treatment of RNA-dependent RNA virus infection in a mammal.

14. The use of Claim 13 wherein said RNA-dependent RNA virus infection is HCV infection.

15. Use of a compound of Claim 1 in the manufacture of a medicament for treatment of RNA-dependent RNA virus infection in a mammal.

16. The use of Claim 15 wherein said RNA-dependent RNA virus infection is HCV infection.